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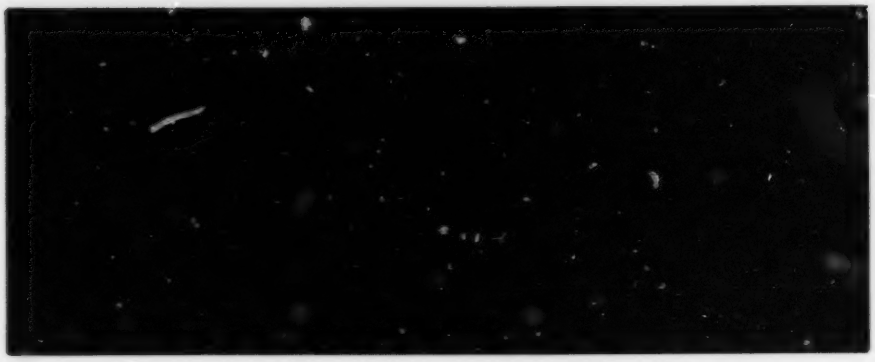

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Final Report

R-89-01-0449

Effects of Tube-Feeding with a Commercial Milk Replacer on Growth and Survival of Light Newborn Piglets - An On-Farm Study

Conducted by Irene Wenger and G. Christison

Funded by the Agriculture Development Fund

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Abstract and Summary, R89-01-0449

EFFECTS OF TUBE-FEEDING WITH A COMMERCIAL MILK REPLACER ON GROWTH AND SURVIVAL OF LIGHT NEWBORN PIGLETS - AN ON-FARM STUDY

Irene I. Wenger and G.I. Christison

ABSTRACT

The hog industry has consistently been plagued with litters of uneven birth weights. The smallest piglets in the litter cannot compete effectively with larger littermates, and without access to the udder to suckle, they may become irreversibly chilled and will die. This on-farm study was undertaken to determine if the tube-feeding of light birth weight piglets with a commercial milk replacer solution would improve their performance and increase their survival. No differences were found between tubed and control piglets on body weight or average daily gain to 21 days. The one-time tubing of milk did not improve piglet survival.

SUMMARY

The hog industry has consistently been plagued with litters of uneven birth weights. Piglets are born with limited energy reserves which are rapidly depleted while drying off, engaging in teat-seeking activities and competition at the udder with littermates. The light birth weight piglets lose more body heat to the environment because they have a proportionately larger surface area relative to body mass. The colostrum from the sow is very important to all newborn piglets. It supplies them with immunoglobulins, which are the first line of defense against disease organisms. As well, colostrum is also a readily available source of supplemental energy. It is very important for smaller piglets to gain access to the udder to suckle, because without the energy they derive from colostrum, they may become irreversibly chilled. With their increased heat loss, and their inability to compete effectively at the udder, losses of these light birth weight piglets can be high. The objective of the on-farm trial was to determine the effects of tube-feeding light birth weight piglets with milk replacer on their performance and survival. The supplemental milk did not significantly improve body weight or average daily gain to day 21. During the trial, from a total of 146, 19 (25.7%), and 18 (25%) piglets, respectively, died on control and tubed treatments, with an over-all trial mortality of 25.3%. These mortalities appear high. However, given the fact that only the smallest piglets on the farm were used, and that 7 control and 3 tubed piglets were splays, the values obtained were not unrealistic and were consistent with other research results. Dosing only the light birth weight piglets with the milk replacer solution did not improve their overall performance to 21 days. However, since the tubing procedure was readily accepted and quickly incorporated into the farm's daily farrowing routine, it appears to provide some benefits. Light weight piglets require prompt attention at birth. Since the delay in cross-fostering (which allows a number of sows to finish farrowing) may be detrimental to their survival, light birth weight piglets should perhaps be tubed immediately after birth, so that they receive sufficient nutrients to carry them over until they are moved to a foster sow.

Technical Report, R89-01-0449

EFFECTS OF TUBE-FEEDING WITH MILK REPLACER ON GROWTH AND SURVIVAL OF LIGHT WEIGHT NEWBORN PIGLETS - AN ON-FARM STUDY

Irene I. Wenger and G.I. Christison

ABSTRACT

The hog industry has consistently been plagued with litters of uneven birth weights. The smallest piglets in the litter cannot compete effectively with larger littermates, and without access to the udder to suckle, they may become irreversibly chilled and will die. This on-farm study was undertaken to determine if the tube-feeding of light birth weight piglets with a commercial milk replacer solution would improve their performance and increase their survival. No differences were found between tubed and control piglets on body weight or average daily gain to 21 days. The one-time tubing of milk did not improve piglet survival.

BACKGROUND AND OBJECTIVES

The hog industry has consistently been plagued with litters of uneven birth weights. Piglets are born with limited energy reserves which are rapidly depleted while drying off, engaging in teat-seeking activities and competition at the udder with littermates. The light birth weight piglets lose more body heat to the environment because they have a proportionately larger surface area relative to body mass. The colostrum from the sow is very important to all newborn piglets. It supplies them with immunoglobulins, which are the first line of defense against disease organisms. As well, colostrum is also a readily available source of supplemental energy. It is very important for smaller piglets to gain access to the udder to suckle, because without the energy they derive from colostrum, they may become irreversibly chilled. With their increased heat loss, and their inability to compete effectively at the udder, losses of these light birth weight piglets can be high. Many management techniques have been employed by hog producers to reduce the losses of these piglets, such as cross-fostering, split suckling, and early weaning of larger piglets. Other simple and very practical procedures are required to further assist these light birth weight piglets. The realities of on-farm labour demand a one-shot solution, rather than frequent attention.

The objective of the on-farm trial was to determine the effects of tube-feeding light birth weight piglets with milk replacer on their performance and survival.

EXPERIMENTAL METHOD

Immediately after birth, all piglets were placed in a heated creep area for a minimum of 2 h (this allowed time for all sows in the room to finish farrowing and the experimental litters to be formed). A total of 146 light birth weight piglets (≤ 1.1 kg) were selected from among all piglets born, and

were randomly assigned to 15 foster sows on seven experimental days. Piglets were assigned at random from within these litters to one of two treatments (equal number of piglets per treatment per litter): sham-fed (C), or tubed (T) with a 25% commercial milk replacer solution (Wet Nurse™, Prairie Microtech Inc., Regina, Saskatchewan). A tube was passed into the stomach of all experimental piglets. The sham-fed group received no milk, while the treatment group were dosed at a rate of 15 mL kg^{-1}. Piglets were weighed on days 1, 4, and 21, and all deaths were recorded.

RESULTS AND DISCUSSION

Growth

The supplemental milk did not significantly improve body weight (Table 1) on day 1 (1.02, 1.07 kg ± 0.013 SEM) or to day 21 (4.95, 5.07 kg ± 0.096, for C and T treatments, respectively). No differences were found between treatments in average daily gain to day 1 (80.3, 96.0 g day^{-1} ± 8.51) or to day 21 (190.1, 194.9 g day^{-1} ± 4.35, for C and T treatments, respectively). Despite the fact that no improvements in piglet growth was found in this trial, this technology was well received by the farrowing staff. The tube-feeding of weak and sick piglets was incorporated into the daily farrowing routine.

Mortality

During the trial, from a total of 146, 19 (25.7%), and 18 (25%) piglets, respectively, died on C and T treatments, with an over-all trial mortality of 25.3%. These mortalities appear high. However, given the fact that only the smallest piglets on the farm were used as experimental animals, and that 7 and 3 piglets, for treatments C and T respectively, were splays, the values obtained were not unrealistic and were consistent with other research results.

CONCLUSIONS AND IMPACT

Dosing only the light birth weight piglets with the milk replacer solution did not improve their overall performance to 21 days. However, since the tubing procedure was readily accepted and quickly incorporated into the farm's daily farrowing routine, it appears to have some benefits.

The methodology for this experiment may have contributed to the lack of significant outcomes in this experiment. Firstly, piglets were thoroughly warmed, dried and rested in a heated creep prior to the start of the experiment. This was necessary since a specific weight class of piglet was required. All piglets may thus have been more vigorous and had greater coordination in locomotion. It is unclear what impact this may have had on the experimental results. Secondly, since only light weight piglet litters were formed, the degree of competition within each litter may have been altered. The light weight piglets no longer have to contend with larger littermates. They will now compete with piglets of a more comparable size.

Even though it is a common management tool, cross-fostering is usually delayed until a number of sows have finished farrowing. This delay in attention may be crucial to the survival of these light birth weight piglets. Perhaps if light weight piglets were tubed immediately after birth, they may receive sufficient nutrients to carry them over until they are moved to a foster sow.

The results from this trial, and other recent experiments shows that the one-time tube-feeding of a milk replacer solution is not detrimental to the performance of newborn piglets.

ACKNOWLEDGEMENTS

This project was supported by a grant from the Agriculture Development Fund of Saskatchewan Agriculture. The technical assistance by Carol Elian and the farrowing staff at Stomp Pork Farm, Lanigan, Saskatchewan, is gratefully acknowledged. The authors would also like to thank Ivan Stomp for the use of his facilities and his cooperation in the successful completion of this trial.

Table 1. Effect of tube-feeding milk replacer on body weight (kg) and daily gain (g/day) of light birth weight piglets

	Treatment		
	No milk	Milk	SEM
No. piglets	74	72	
Birth weight	0.93	0.96	0.011
Weight day 1	1.02	1.07	0.013
Weight day 4	1.41	1.46	0.026
Weight day 21	4.95	5.07	0.096
ADG day 1	80.3	96.0	8.51
ADG day 4	112.1	117.0	4.53
ADG day 21	190.1	194.9	4.35

AGRICULTURE DEVELOPMENT FUND SASKATCHEWAN
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ADF FINAL REPORT, JANUARY 1990

R-89-01-0449

TUBE FEEDING SUPPLEMENTAL MILK TO REDUCE PRE-WEANING LOSSES IN SUCKLING PIGS

Executive Summary

The project has been completed and an abstract, summary and technical report are provided separately. The work showed that tube feeding a single dose of milk replacer did not affect survival or growth of light birth weight piglets.

List of Papers Prepared and Talks Given

No papers other than the attached technical report have been prepared. A similar research report will be published in the Prairie Swine Center Annual Report, 1990. This is widely distributed among provincial swine producers and appropriate specialists.

The results will be integrated into the Master's Thesis of I.I. Wenger which is principally based on a sub-project of ADF R-86-01-0148.

Several articles arising from the combined work will be submitted to scientific journals and to pork production magazines.

Expenditures

A verified statement of expenditures will follow as soon as it becomes available.

Personnel, and Percentage of Their Time Involved Since July 1, 1989

G.I. Christison, Professor	5%
I.I. Wenger, Graduate student	33%
C.A. Elian, Technician	10%
Several stockmen, total	5%

Equipment Purchased of Value in Excess of $500

None